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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/088,913	05/07/2002	Michael O. Thompson	3672-0144P	8909
2292	7590	12/02/2004	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			HUR, JUNG H	
			ART UNIT	PAPER NUMBER
			2824	

DATE MAILED: 12/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/088,913

Applicant(s)

THOMPSON ET AL.

Examiner

Jung (John) Hur

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 6-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,12 and 13 is/are rejected.
- 7) ☒ Claim(s) 2-5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/22/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Amendment

1. Acknowledgment is made of applicant's Amendment, filed 07 September 2004. The changes and remarks disclosed therein were considered.

Claim 13 has been added. Therefore, claims 1-13 are pending in the application. Of these, claims 6-11 remain withdrawn from further consideration as being drawn to non-elected inventions.

Information Disclosure Statement

2. Acknowledgment is made of applicant's Information Disclosure Statement (IDS) Form PTO-1449, filed 22 July 2004. The information disclosed therein was considered.

Drawings

3. The replacement drawing sheets for Figs. 1-10 were received on 07 September 2004.

The drawings in these replacement sheets are acceptable.

Specification

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

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The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because the first sentence is incomplete, and therefore, not in narrative form. It is suggested that "including" in the first line be replaced with --includes--. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1, 12 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Each of said claims recites the limitation "each word line in the segment being adjoined to a separate bit line" in the respective last clause of the claim. This limitation is unclear.

For the purpose of further examination, it is understood as a limitation that is descriptive of the matrix structure of a segment in Fig. 5 or 6.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda (U.S. Pat. No. 5,487,029) in view of Clemons (U.S. Pat. No. 4,599,709).

Kuroda, for example in Figs. 1 and 2, discloses a non-volatile passive matrix memory device comprising ferroelectric memory cells (for example, C0 - C7 in Fig. 2); word lines (for example, W00 - W07 in Fig. 2) and bit lines (for example, D0 - D7 in Fig. 2) that are orthogonal to each other; the word lines divided into a number of segments (for example, BLOCK (0,0) through BLOCK (0,7) in Fig. 1), each segment comprising and being defined by a plurality of adjoining bit lines (for example, D0 - D7 for BLOCK (1,0)); each word line in a segment is differentiated based on the position of the word line within the segment (i.e., in different row positions), each word line in the segment being adjoined to a separate bit line (i.e., in a matrix structure); a plurality of sensing means (for example, SA in WRC0 - WRC7), each being adapted for sensing the charge flow in the bit line connected therewith in order to determine a logical value stored in the memory cell defined by the bit line (see, for example, column 12, lines 42-54).

However, Kuroda does not disclose means for connecting each bit line assigned to a segment with an associated sensing means, thus enabling simultaneous connection of all memory cells assigned to a word line on a segment for readout via the corresponding bit lines of the segment.

Clemons, for example in Figs. 2 and 3, discloses means (for example, via T200 - T203 controlled by BYTE BLOCK DECODER) for connecting each bit line (for example, bit lines for columns C11 - C14) assigned to a segment (for example, BYTE BLOCK 1) with an associated

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sensing means (for example, SA1 - SA4 via I/O SWITCHES in Fig. 3), thus enabling simultaneous connection of all memory cells (for example, M111 - M114) assigned to a word line (for example, R1) on a segment (for example, BYTE BLOCK 1) for readout via the corresponding bit lines (for example, bit lines for columns C11 - C14) of the segment.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Kuroda by incorporating the means of Clemons for connecting each bit line assigned to a segment with an associated sensing means, thus enabling simultaneous connection of all memory cells assigned to a word line on a segment for readout via the corresponding bit lines of the segment, as an equivalent alternative means for segmenting and simultaneously accessing a byte (or a word or other widths of bits) of information from the memory, for the purpose of having a ferroelectric memory organization that provides for improved utilization of spare columns, while allowing for subdivision of the memory into portions (see Clemons column 3, lines 40-43).

9. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda (U.S. Pat. No. 5,487,029) in view of Clemons (U.S. Pat. No. 4,599,709) as applied to claim 1 above, and further in view of Seyyedy (U.S. Pat. No. 5,969,380).

The combination of Kuroda and Clemons discloses a non-volatile passive matrix memory device as in claim 1 above, with the exception of a volumetric data storage apparatus with a plurality of stacked layers, each layer comprising one of said non-volatile passive matrix memory devices. Seyyedy, for example in Figs. 1 and 2, discloses a ferroelectric volumetric data storage apparatus with a plurality of stacked layers (for example, four layers in Fig. 1 and three

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layers in Fig. 2), each layer comprising one of non-volatile passive matrix memory devices (planar ferroelectric memory arrays). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to stack a plurality of devices (as discloses in the above combination of Kuroda and Clemons) in a volumetric data storage apparatus, as in Seyyedy, for the purpose of increasing the density of memory cells over a given substrate area.

Allowable Subject Matter

10. Claims 2-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The record of the prosecution as a whole makes clear the reasons for the indication of allowable subject matter.

Response to Arguments

11. Applicant's arguments filed 07 September 2004 have been fully considered but they are not persuasive.

Applicant argues, in the bottom paragraph on page 18, that "Clemons does not teach or suggest connecting specifically corresponding bit lines of each [byte] block with an associated sensing means such that simultaneous readout of all memory cells in a word line segment is achieved," and that "[a]lthough the transistors in Clemons [byte] block are simultaneously accessed, they are not simultaneously readout by separate sensing means for each word and bit

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line cell in the word line segment as claimed by applicants. Thus, a parallel readout accomplished in the present invention, can never be accomplished in Clemons."

In response, it is noted that Clemons does teach connecting corresponding bit lines of each byte block with an associated sensing means such that simultaneous, parallel readout of all memory cell in a word line segment is achieved. Specifically, in Fig. 2, once a block is selected, all the bit lines in the block are connected to the data lines I/01 - I/04. In Fig. 3, the data lines I/01 - I/04 are simultaneously connected to corresponding sense amplifiers SA1 - SA4 via I/O switches. Therefore, a simultaneous, parallel readout is accomplished in Clemons. Also, in column 3, lines 45-49, Clemons teaches that the disclosed invention "accesses a multiplicity of bits (i.e. a byte) simultaneously" (emphases added); in column 4, lines 3-7, that "the term 'byte' refers to the multiple bits that are accessed at one time" (emphasis added); and in column 6, lines 8-14, one sense amplifier for each I/O line selected.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jung (John) Hur whose telephone number is (571) 272-1870. The examiner can normally be reached on M-F 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on (571) 272-1869. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jhh



MICHAEL S. LEBENTRITT
PRIMARY EXAMINER